

OCCUPATIONAL SAFETY AND HEALTH EVALUATION STANDARD FOR THE UNITED STATES SAFETY EVALUATION OF THE RUSSIAN FISSILE MATERIAL STORAGE FACILITY



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CONTENTS

	Page
ACRONYM LIST.....	IV
ABSTRACT.....	1
1. INTRODUCTION.....	1
2. PURPOSE.....	2
3. OCCUPATIONAL SAFETY AND HEALTH CONSIDERATIONS.....	2
4 POTENTIALLY APPROPRIATE STANDARDS.....	2
4.1. RUSSIAN APPROACH.....	2
4.2. DOE APPROACH.....	2
4.3. NRC APPROACH.....	3
4.4. IAEA (INTERNATIONAL) APPROACH.....	3
4.5. TOMSK APPROACH.....	4
4.6. COMPARISON OF OCCUPATIONAL SAFETY AND HEALTH STANDARDS.....	4
5. SELECTED STANDARD.....	4
6. RATIONALE FOR THE SELECTED STANDARD.....	6
APPENDIX A. COMPARISON OF THE DRAFT PROPOSED 29 CFR 1900.1 WITH ATTACHMENT 2 OF DOE ORDER 440.1A, AND INTERNATIONAL LABOR STANDARD C 155	7
REFERENCES	19

ACRONYM LIST

CFR	Code of Federal Regulation
DOE	Department of Energy
IAEA	International Atomic Energy Agency
ILO	International Labour Organization
LANL	Los Alamos National Laboratory
NRC	Nuclear Regulatory Commission
OSA	Occupational Safety Act of 1970, as amended
OSHA	Occupational Safety and Health Administration
PEP	Project Execution Plan
RFMSF	Russian Fissile Material Storage Facility
SEP	Safety Evaluation Plan
UN	United Nations
US	United States

OCCUPATIONAL SAFETY AND HEALTH EVALUATION STANDARD FOR THE UNITED STATES SAFETY EVALUATION OF THE RUSSIAN FISSILE MATERIAL STORAGE FACILITY

ABSTRACT

This report documents the evaluation standard to be used in the United States safety evaluation of the occupational safety and health program for the Russian Fissile Material Storage Facility (RFMSF).

Keywords: occupational safety and health, industrial hazards, standard, industrial hygiene, 29 CFR 1900, International Labour Organization

1. INTRODUCTION

The United States (US) safety evaluation of the Russian Fissile Material Storage Facility (RFMSF) is described in the Safety Evaluation Plan¹ (SEP). The activity that addresses selection of evaluation standards for the US safety evaluation is described in Section 4.2.4, "Reference Standards Set," of the SEP and in Subtask 1.2.4.1, "Review Relevant US and Russian Standards," of the Project Execution Plan² (PEP). These standards are intended to be the metrics for evaluating safety adequacy of RFMSF.

As described in the SEP, the objective of the US safety evaluation is to assess the ability of RFMSF hazard control measures to achieve safety functions and therefore a level of safety consistent with expectations of the Department of Energy (DOE), the US Nuclear Regulatory Commission (NRC), and the international community (IAEA). To fulfill this objective, the safety evaluation standards are selected consistent with safety performance expectations for a similar facility if built in the US. These performance expectations are embodied in relevant US and IAEA safety principles and standards. Therefore, these relevant occupational safety and health principles and standards are reviewed in Section 4 to provide the basis for selecting an appropriate occupational safety and health evaluation standard. The context for the selection is the occupational safety and health considerations for the RFMSF, which are described in Section 3. The selected occupational safety and health standard is presented in Section 5, and the rationale for the selection is presented in Section 6. Additional information supporting the selection process is provided in the appendix.

This standard addresses occupational safety and health protection programs that provide protection against industrial hazards (the hazards routinely encountered in manufacturing and commercial activities that do not involve radioactive materials or highly hazardous chemicals^{*}).

^{*} Highly hazardous chemicals are those that possess sufficiently severe toxic, reactive, flammable, or explosive properties to create the hazard of a catastrophic accident. See 29 CFR 1910.119(b).

The RFMSF evaluation standards for protection against the hazards associated with radioactive materials, radiation, and chemical hazards are discussed elsewhere.^{3,4}

2. PURPOSE

This document provides the basis for the occupational safety and health evaluation standard that the US side will use in its evaluation of occupational safety and health protection for the RFMSF.

3. OCCUPATIONAL SAFETY AND HEALTH CONSIDERATIONS

The industrial hazards in existence at the RFMSF are, in general, analogous to those present in facilities where large items are moved and stored, such as warehouses. The hazard analysis for the predecessor facility to the RFMSF (Tomsk) did not consider ordinary industrial hazards, noting that "The risk associated with these hazards is deemed acceptable if standard industrial safety practices are followed."^{5,*} This standard mandates that standard industrial safety practices be applied. Although this analysis did not consider ordinary industrial hazards, it did identify toxic gases produced during small fires as a significant worker hazard. This hazard is controlled through the fire protection measures mandated in the Fire Protection Standard. The accident response and first aid measures mandated in this standard mitigate the potential consequences associated with this hazard.

The Safety Analysis included in the 35% design package⁶ does not specifically identify industrial hazards, although there are potential industrial hazard components associated with a number of the postulated accidents, including dropping of containers and fires. The Safety Analysis and Evaluation Report will consider these and other postulated radiological accidents that have an industrial hazard component. The measures established to provide protection against these radiological accidents supplement the occupational safety and health provisions of this standard to provide additional protection against industrial hazards.

4 POTENTIALLY APPROPRIATE STANDARDS

4.1. Russian Approach

The Safety Analysis included in the 35% design package does not specifically identify industrial hazards or the standards that will be used for industrial safety.

4.2. DOE Approach

Occupational safety and health protection programs in US nuclear facilities, except for those overseen by the United States Department of Energy (DOE), are regulated by the Occupational Safety and Health Administration (OSHA) in the United States Department of Labor, under the Occupational Safety Act of 1970, as amended (OSA).[†] The OSA requires that each employer "furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his

* Ref. 5, p. 4.

† 15 USC 651 *et seq.*

employees.” The OSA also mandated that the Secretary of Labor “shall as soon as practicable during the period beginning with the effective date of this Act and ending two years after such date, by rule promulgate as an occupational safety or health standard any national consensus standard, and any established Federal standard, unless he determines that the promulgation of such a standard would not result in improved safety or health for specifically designated employees.”^{*} This Congressional mandate resulted in the promulgation of occupational safety and health regulations[†] that were composed of an extensive set of US national consensus standards, which addressed in very prescriptive manner, specific industrial hazards and occupational safety for numerous specific industries. These standards provide a basis for the evaluation and regulation of occupational safety in the US. However, their utility for the evaluation of facilities in other nations that may employ different consensus standards or approach for achieving occupational safety is quite limited. OSHA also developed a proposed draft regulation for an overall safety management program to supplement compliance with the detailed, prescriptive regulations[‡]; draft proposed 29 CFR 1900.1).[§] The required safety management program elements are dependent upon the prescriptive US consensus standards and, therefore, have greater potential utility for the evaluation of facilities, such as the RFMSF that are in other nations. This draft proposed OSHA regulation has not yet been approved.

Although DOE nuclear facilities are exempted from OSHA regulation under the OSA^{**}, DOE has endorsed the OSHA regulations as mandatory standards for DOE nuclear facilities.^{††} However, DOE has required that its facilities establish a safety management program to supplement compliance with the prescriptive OSHA regulations.^{§,§,††} The basic elements of the safety management program mandated by DOE, in Attachment 2 of DOE Order 440.1A, “Worker Protection Management for DOE Federal and Contractor Employees¹⁰,” are not dependent upon the prescriptive US consensus standards. Therefore, like the proposed draft OSHA regulation, these safety management program elements are useful for the evaluation of the occupational safety program at the RFMSF. The safety management program requirements in Attachment 2 of DOE Order 440.1A are quite similar to the draft proposed 29 CFR 1900.1.

4.3. NRC Approach

NRC's responsibility in the area of occupational safety and health for NRC licensed facilities is described in a memorandum of understanding¹¹ between OSHA and the NRC.

4.4. IAEA (International) Approach

The IAEA has not established standards for industrial safety and health. Instead, the international standards in this area are promulgated by the International Labour Organization (ILO); the UN special agency which addresses labor issues. Both the United States and the Russian Federation are members of the ILO. The international labor standards are promulgated as conventions that

* 15 USC 654(a)(1).

† 15 USC 655.

‡ 29 CFR 1910.

§ OSHA at <http://www.osha-slc.gov/SLTC/safetyhealth/nshp.html>.

** 15 USC 653(b)(1).

†† Ref. 8, Attachment 2, Paragraph 12.a,

‡‡ Ref. 8, Attachment 2, Paragraphs 1 – 11

are ratified by member nations and are intended to form the bases for national systems of regulation. The international standard in this area is the International Labor Standard, C155, "Occupational Safety and Health Convention, 1981," promulgated in 1981¹².^{*} The Russian Federation ratified this standard in May 1998.[†] The requirements of Standard C155 mandate that member nations implement and periodically review a coherent national policy on occupational safety, occupational health and the working environment. The aim of the policy is to prevent accidents and injury to health arising out of, linked with or occurring in the course of work, by minimizing, so far as is reasonably practicable, the causes of hazards inherent in the working environment.[‡] The standard requires that this national policy be the basis for a set of regulations that are enforced through an inspection program and penalties for violations.[§] This is quite similar to the requirements of the OSA. The safety management program requirements in Standard C155 are also quite similar to the draft proposed 29 CFR 1900.1 and those in Attachment 2 of DOE Order 440.1A.

4.5. Tomsk Approach

Occupational safety and health standards were not established for the Tomsk safety analysis, deferring to standard industrial practice.

4.6. Comparison of Occupational Safety and Health Standards

Table A-1 in Appendix A provides a comparison of the corresponding safety management program requirements in the draft proposed 29 CFR 1900.1, Attachment 2 of DOE Order 440.1A, and International Labor Standard C155. Since neither NRC, IAEA, nor RFMSF have programs in occupational safety and health separate from those of OSHA or its Russian counterpart, this is the most meaningful comparison available.

5. SELECTED STANDARD

The occupational safety and health evaluation standard selected for the US safety evaluation of the RFMSF is a composite of appropriate aspects of proposed 29 CFR 1900.1 and DOE Order 440.1A.

1. The RFMSF occupational safety and health program^{**} should ensure that, so far as is reasonably practicable:
 - a. The workplaces, machinery, equipment, and processes under its control are safe and without risk to health; and

^{*} International Labour Organization at <http://ilolex.ilo.ch:1567/scripts/convde.pl?C155>.

[†] International Labour Organization at <http://ilolex.ilo.ch:1567/public/50normes/ilolex/pdconv.pl?host=status01&textbase=iloeng&document=6526&chapter=19&query=C155&highlight=&querytype=bool>.

[‡] International Labour Organization C155, *Op. Cit.*, Article 4.

[§] *Ibid.* Articles 9 and 10.

^{**} In this context a documented program may be composed of a program description document and associated implementing documents, such as procedures, or a set of Russian regulations, standards, or norms in combination with associated implementing documents, such as procedures.

- b. The chemical, physical, and biological substances and agents under its control are without risk to health when appropriate measures of protection are taken.
2. The RFMSF occupational safety and health program shall include the following.
- a. Systematic identification of hazards, including periodic workplace inspections; periodic monitoring of work areas to identify potential health risks; review of safety and health information; evaluation of new equipment, materials, and process for safety and health hazards before they are introduced into the workplace; and reassessment of hazards when safety and health information or change in workplace conditions indicates that a new or increased hazard may be present;
 - b. Systematic control / abatement of identified hazards, including immediate protection of workers from imminent danger; implementation of hazard control measures, in accordance with applicable Russian regulations, standards, and norms, based upon the hierarchy of (1) engineered controls (e.g., design, hardware, or physical measures), (2) work practices and administrative controls (e.g., procedures) that limit worker exposure to hazards, and (3) personal protective equipment;
 - c. Identification of worker responsibilities, including prompt reporting by workers to their immediate supervisors of any situation that they have reason to believe presents an imminent and serious danger to their lives or health;
 - d. Provision of training in occupational safety and health to workers, including (1) the nature of the identified hazards to which they may be exposed and how to recognize these hazards, (2) measures in the design and operations to control these hazards, (3) protective measures the workers must follow to prevent or minimize exposure to these hazards.
 - e. Where necessary and so far as reasonably practicable, provision of adequate protective clothing and protective equipment to prevent risk of accidents or of adverse effects on health;
 - f. Where necessary, measures to deal with emergencies and accidents, including adequate first aid arrangements;
 - g. Provisions for investigation of any work-related death, serious injury or illness, or incident to identify the cause(s) of the event and to recommend corrective actions so that such events are not repeated.

The key questions to be addressed in the US safety evaluation that relate to this standard include the following.

- 1. So far as is reasonably practicable, are the workplaces, machinery, equipment, and processes used at the RFMSF safe and without undue risk to health?
- 2. So far as is reasonably practicable, are the chemical, physical, and biological substances and agents used in the operation of the RFMSF without undue risk to health when appropriate measures of protection are taken?

3. Have hazards been systematically identified?
4. Have adequate control/abatement provisions been defined in terms of engineered controls, work practices and administrative controls, and personal protective equipment for identified hazards?
5. Have worker responsibilities been identified such as reporting to their immediate supervisors any situation that they have reason to believe presents an imminent and serious danger to their lives or health?
6. Are workers trained in occupational safety and health, including (1) the nature of the hazards to which they may be exposed and how to recognize these hazards, (2) measures in the design and operations to control these hazards, and (3) protective measures the workers must follow to prevent or minimize exposure to these hazards?
7. Where necessary and so far as is reasonably practicable, are adequate protective clothing and protective equipment provided?
8. Where necessary, are measures provided to deal with emergencies and accidents, including adequate first aid arrangements?
9. Will work-related death, serious injury or illness, or incident be investigated to identify cause(s) and corrective actions so that such events are not repeated?

6. RATIONALE FOR THE SELECTED STANDARD

An ad hoc standard was derived for RFMSF by selecting from those aspects of proposed 29 CFR 1900.1, DOE Order 440.1A and International Labor Standard C155 that could reasonably be expected to apply in the Russian regulatory framework.

**APPENDIX A. COMPARISON OF THE DRAFT PROPOSED 29 CFR 1900.1 WITH
ATTACHMENT 2 OF DOE ORDER 440.1A, AND INTERNATIONAL LABOR
STANDARD C 155**

Table A-1*
Comparison of Draft Proposed 29 CFR 1900.1, Attachment 2 of DOE Order 440.1A,
and International Labor Standard C155

Program Element	OSHA Draft Proposed 29 CFR 1900.1	DOE Order 440.1A Attachment 2	International Labor Standard C155
Program Objective	Establish a workplace safety and health program to ensure compliance with OSHA standards and the General Duty Clause of the Act. [The General Duty Clause of the Act requires that each employer "furnish to each of his employees employment and a place of employment, which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees."] {Purpose}	<ol style="list-style-type: none"> 1. Implement a written worker protection program that: <ol style="list-style-type: none"> a. provides a place of employment free from recognized hazards that are causing or are likely to cause death or serious physical harm to employees; and b. integrates all requirements contained in this attachment and other related site-specific worker protection activities. 2. Establish written policy, goals, and objectives for the worker protection program. 	Employers shall be required to ensure that, so far as is reasonably practicable, the workplaces, machinery, equipment and processes under their control are safe and without risk to health. {Article 16.1}
Training and Qualification	Provide managers, supervisors, and employees with the authority, access to relevant information, training, and resources they need to carry out their safety and health responsibilities. {1900.1(c)(1)(ii)(B)}	<ol style="list-style-type: none"> 3. Use qualified worker protection staff to direct and manage the worker protection program. 11. Provide workers, supervisors, managers, visitors, and worker protection professionals with worker protection training. 	There shall be arrangements at the level of the undertaking under which— (d) workers and their representatives in the undertaking are given appropriate training in occupational safety and health; {Article 19(d)}
Responsibility and Accountability	Establish the program responsibilities of managers, supervisors, and employees for safety and health in the workplace and hold them accountable for carrying out those responsibilities. {1900.1(c)(1)(ii)(B)}	<ol style="list-style-type: none"> 4. Assign worker protection responsibilities, evaluate personnel performance, and hold personnel accountable for worker protection performance. 	There shall be arrangements at the level of the undertaking under which— (a) workers, in the course of performing their work, co-operate in the fulfillment by their employer of the obligations placed upon him; {Article 19(a)}

* All statements are direct quotes from the document cited at the top of the column unless they are contained in brackets.

Table A-1*
Comparison of Draft Proposed 29 CFR 1900.1, Attachment 2 of DOE Order 440.1A,
and International Labor Standard C155

Program Element	OSHA Draft Proposed 29 CFR 1900.1	DOE Order 440.1A Attachment 2	International Labor Standard C155
Employee Involvement	The employer must provide employees with opportunities for participation in establishing, implementing, and evaluating the program. {1900.1(c)(2)(i)}	5. Encourage employee involvement in the development of program goals, objectives, and performance measures and in the identification and control of hazards in the workplace.	There shall be arrangements at the level of the undertaking under which— (e) workers or their representatives and, as the case may be, their representative organizations in an undertaking, in accordance with national law and practice, are enabled to inquire into, and are consulted by the employer on, all aspects of occupational safety and health associated with their work; for this purpose technical advisers may, by mutual agreement, be brought in from outside the undertaking. {Article 19(e)}

Table A-1*
Comparison of Draft Proposed 29 CFR 1900.1, Attachment 2 of DOE Order 440.1A,
and International Labor Standard C155

Program Element	OSHA Draft Proposed 29 CFR 1900.1	DOE Order 440.1A Attachment 2	International Labor Standard C155
Worker Rights	<p>The employer must -</p> <p>(A) Regularly communicate with employees about workplace safety and health matters;</p> <p>(B) Provide employees with access to information relevant to the program;</p> <p>(C) Provide ways for employees to become involved in hazard identification and assessment, prioritizing hazards, training, and program evaluation;</p> <p>(D) Establish a way for employees to report job-related fatalities, injuries, illnesses, incidents, and hazards promptly and to make recommendations about appropriate ways to control those hazards; and</p> <p>(E) Provide prompt responses to such reports and recommendations. {1900.1(c)(2)(ii)}</p>	<p>6. Provide workers the right, without reprisal, to:</p> <p>a. accompany DOE worker protection personnel during workplace inspections;</p> <p>b. participate in activities provided for herein on official time;</p> <p>c. express concerns related to worker protection;</p> <p>d. decline to perform an assigned task because of a reasonable belief that, under the circumstances, the task poses an imminent risk of death or serious bodily harm to that individual, coupled with a reasonable belief that there is insufficient time to seek effective redress through the normal hazard reporting and abatement procedures established in accordance with the requirements herein;</p> <p>e. have access to DOE worker protection publications, DOE-prescribed standards, and the organization's own worker protection standards or procedures applicable to the workplace;</p> <p>f. observe monitoring or measuring of hazardous agents and have access to the results of exposure monitoring;</p> <p>g. be notified when monitoring results indicate they were overexposed to hazardous materials; and</p> <p>h. receive results of inspections and accident investigations upon request.</p> <p>7. Implement procedures to allow workers, through their supervisors, to stop work when they discover</p>	<p>The policy referred to in Article 4 of this Convention shall take account of the following main spheres of action in so far as they affect occupational safety and health and the working environment:</p> <p>(e) the protection of workers and their representatives from disciplinary measures as a result of actions properly taken by them in conformity with the policy referred to in Article 4 of this Convention. {Article 5(e)}</p> <p>A worker who has removed himself from a work situation, which he has reasonable justification to believe, presents an imminent and serious danger to his life or health shall be protected from undue consequences in accordance with national conditions and practice. {Article 13}</p> <p>There shall be arrangements at the level of the undertaking under which--</p> <p>(a) workers, in the course of performing their work, co-operate in the fulfillment by their employer of the obligations placed upon him;</p> <p>(b) representatives of workers in the undertaking co-operate with the employer in the field of occupational safety and health;</p> <p>(c) representatives of workers in an undertaking are given adequate information on measures taken by the employer to secure occupational safety and health and may consult their representative organizations about such information provided they</p>
Worker Rights (Cont.)	<p>The employer must not discourage employees from making reports and recommendations about fatalities, injuries, illnesses, incidents, or hazards in the workplace, or from otherwise participating in the workplace safety and health program. {1900.1(c)(2)(iii)}</p>	<p>March 2001</p>	
Occupational Safety and Health Standard			

Table A-1*
Comparison of Draft Proposed 29 CFR 1900.1, Attachment 2 of DOE Order 440.1A,
and International Labor Standard C155

Program Element	OSHA Draft Proposed 29 CFR 1900.1	DOE Order 440.1A Attachment 2	International Labor Standard C155
Hazard Analysis	The employer must systematically identify and assess hazards to which employees are exposed and assess compliance with the General Duty Clause and OSHA standards. {1900.1(d)(1)}	9. Identify existing and potential workplace hazards and evaluate the risk of associated worker injury or illness. a. Analyze or review the following. (1) designs for new facilities and modifications to existing facilities and equipment; (2) operations and procedures; and (3) equipment, product, and service needs.	To give effect to the policy referred to in Article 4 of this Convention, the competent authority or authorities shall ensure that the following functions are progressively carried out: (a) the determination, where the nature and degree of hazards so require, of conditions governing the design, construction and layout of undertakings, the commencement of their operations, major alterations affecting them and changes in their purposes, the safety of technical equipment used at work, as well as the application of procedures defined by the competent authorities; {Article 11(a)}
Hazard Analysis (Cont.)	The employer must - (i) Conduct inspections of the workplace; (ii) Review safety and health information; (iii) Evaluate new equipment, materials, and processes for hazards before they are introduced into the workplace; and (iv) Assess the severity of identified hazards and rank those that cannot be corrected immediately according to their severity. {1900.1(d)(2)}		
	The employer must carry it [the hazard assessment] out: (i) Initially; (ii) As often thereafter as necessary to ensure compliance with the General Duty Clause and OSHA standards and at least every two years; and (iii) When safety and health information or a change in workplace conditions indicates that a new or increased hazard may be present. {1900.1(d)(3)}		

Exposure Monitoring	<p>The employer must keep records of the hazards identified and their assessment and the actions the employer has taken or plans to take to control those hazards.</p> <p>{1900.1(d)(5)}</p>	<p>9. Identify existing and potential workplace hazards and evaluate the risk of associated worker injury or illness.</p> <p>b. Assess worker exposure to chemical, physical, biological, or ergonomic hazards through appropriate workplace monitoring (including personal, area, wipe, and bulk sampling); biological monitoring; and observation. Monitoring results shall be recorded. Documentation shall describe the tasks and locations where monitoring occurred, identify workers monitored or represented by the monitoring, and identify the sampling methods and durations, control measures in place during monitoring (including the use of personal protective equipment), and any other factors that may have affected sampling results.</p>	<p>Employers shall be required to ensure that, so far as is reasonably practicable, the chemical, physical and biological substances and agents under their control are without risk to health when the appropriate measures of protection are taken.</p> <p>{Article 16.2}</p>
Workplace Inspections	<p>The employer must -</p> <p>Conduct inspections of the workplace;</p> <p>{1900.1(d)(2)(i)}</p>	<p>9. Identify existing and potential workplace hazards and evaluate the risk of associated worker injury or illness.</p> <p>c. Evaluate workplaces and activities (accomplished routinely by workers, supervisors, and managers and periodically by qualified worker protection professionals).</p>	

Table A-1*
Comparison of Draft Proposed 29 CFR 1900.1, Attachment 2 of DOE Order 440.1A,
and International Labor Standard C155

Program Element	OSHA Draft Proposed 29 CFR 1900.1	DOE Order 440.1A Attachment 2	International Labor Standard C155
Accident Investigations and Reporting	The employer must investigate each work-related death, serious injury or illness, or incident (near miss) having the potential to cause death or serious physical harm. {1900.1(d)(4)}	8. Identify existing and potential workplace hazards and evaluate the risk of associated worker injury or illness. d. Report and investigate accidents, injuries, and illnesses and analyze related data for trends and lessons learned (reference DOE O 210.1).	To give effect to the policy referred to in Article 4 of this Convention, the competent authority or authorities shall ensure that the following functions are progressively carried out: (c) the establishment and application of procedures for the notification of occupational accidents and diseases, by employers and, when appropriate, insurance institutions and others directly concerned, and the production of annual statistics on occupational accidents and diseases; (d) the holding of inquiries, where cases of occupational accidents, occupational diseases or any other injuries to health which arise in the course of or in connection with work appear to reflect situations which are serious; {Article 11(c) & (d)}
Accident Investigations and Reporting (Cont.)			

Table A-1*
Comparison of Draft Proposed 29 CFR 1900.1, Attachment 2 of DOE Order 440.1A,
and International Labor Standard C155

Program Element	OSHA Draft Proposed 29 CFR 1900.1	DOE Order 440.1A Attachment 2	International Labor Standard C155
Hazard Prevention and Abatement	The employer's basic obligation is to systematically comply with the hazard prevention and control requirements of the General Duty Clause and OSHA standards. {1900.1(e)(1)}	10. Implement a hazard prevention/abatement process to ensure that all identified hazards are managed through final abatement or control. a. For hazards identified either in the facility design or during the development of procedures, controls shall be incorporated in the appropriate facility design or procedure. b. For existing hazards identified in the workplace, abatement actions prioritized according to risk to the worker shall be promptly implemented, interim protective measures shall be implemented pending final abatement, and workers shall be protected immediately from imminent danger conditions. c. Hazards shall be addressed when selecting or purchasing equipment, products, and services. d. Hazard control methods shall be selected based on the following hierarchy. (1) Engineering controls. (2) Work practices and administrative controls that limit worker exposures (3) Personal protective equipment.	1. Employers shall be required to ensure that, so far as is reasonably practicable, the workplaces, machinery, equipment and processes under their control are safe and without risk to health. 2. Employers shall be required to ensure that, so far as is reasonably practicable, the chemical, physical and biological substances and agents under their control are without risk to health when the appropriate measures of protection are taken. 3. Employers shall be required to provide, where necessary, adequate protective clothing and protective equipment to prevent, so far as is reasonably practicable, risk of accidents or of adverse effects on health. {Article 16}
Hazard Prevention and Abatement (Cont.)			

Table A-1*
Comparison of Draft Proposed 29 CFR 1900.1, Attachment 2 of DOE Order 440.1A,
and International Labor Standard C155

Program Element	OSHA Draft Proposed 29 CFR 1900.1	DOE Order 440.1A Attachment 2	International Labor Standard C155
Worker Protection Training	<p>The employer must ensure that:</p> <ul style="list-style-type: none"> (i) Each employee is provided with information and training in the safety and health program; and (i) Each employee exposed to a hazard is provided with information and training in that hazard. <p>{1900.1(f)(1)}</p> <p>The employer must provide information and training in the following subjects:</p> <ul style="list-style-type: none"> (i) The nature of the hazards to which the employee is exposed and how to recognize them; (ii) What is being done to control these hazards; (iii) What protective measures the employee must follow to prevent or minimize exposure to these hazards; and (iv) The provisions of applicable standards. <p>{1900.1(f)(2)}</p> <p>The employer must provide initial information and training as follows:</p> <ul style="list-style-type: none"> (A) For current employees, before the compliance date specified in paragraph (i) for this paragraph (f); and (B) For new employees, before initial assignment to a job involving exposure to a hazard. <p>{1900.1(f)(3)(i)}</p> <p>The employer must provide periodic information and training:</p> <ul style="list-style-type: none"> (C) {1900.1(f)(3)(i)} assignment to a job involving exposure to a hazard. 	<p>11. Provide workers, supervisors, managers, visitors, and worker protection professionals with worker protection training.</p>	<p>There shall be arrangements at the level of the undertaking under which—</p> <ul style="list-style-type: none"> (d) workers and their representatives in the undertaking are given appropriate training in occupational safety and health; <p>{Article 19(d)}</p>
Worker Protection Training (Cont.)			
Occupational Safety and Health Standard		March 2001	

Table A-1*
Comparison of Draft Proposed 29 CFR 1900.1, Attachment 2 of DOE Order 440.1A,
and International Labor Standard C155

Program Element	OSHA Draft Proposed 29 CFR 1900.1	DOE Order 440.1A Attachment 2	International Labor Standard C155
Industrial Accident Response and First Aid	{OSHA regulations address accident response and first aid for industrial accidents in 29 CFR 1910 Subpart E, 1910.151, 1910.156, and 1910.165.}	{DOE Order 440.1A Attachment 2 addresses accident response and first aid by requiring compliance with 29 CFR 1910. DOE Order 151.1 Change 2, "Comprehensive Emergency Management," also addresses accident response and first aid for industrial accidents as well as nuclear accidents.}	Employers shall be required to provide, where necessary, for measures to deal with emergencies and accidents, including adequate first-aid arrangements. {Article 18}
Program Effectiveness Evaluation	<p>The employer's basic obligation is to evaluate the safety and health program to ensure that it is effective and appropriate to workplace conditions. {1900.1(g)(1)}</p> <p>The employer must evaluate the effectiveness of the program:</p> <ul style="list-style-type: none"> (i) As often as necessary to ensure program effectiveness; (ii) At least once within the 12 months following the final compliance date specified in paragraph (i); and (iv) Thereafter at least once every two years. <p>{1900.1(g)(2)}</p> <p>The employer must revise the program in a timely manner to correct deficiencies identified by the program evaluation.</p> <p>{1900.1(g)(3)}</p>	{DOE addresses the evaluation of the effectiveness in DOE Order 414.1A, "Quality Assurance," and 10 CFR 830.120.}	The situation regarding occupational safety and health and the working environment shall be reviewed at appropriate intervals, either over-all or in respect of particular areas, with a view to identifying major problems, evolving effective methods for dealing with them and priorities of action, and evaluating results. {Article 7}

Table A-1*
Comparison of Draft Proposed 29 CFR 1900.1, Attachment 2 of DOE Order 440.1A,
and International Labor Standard C155

Program Element	OSHA Draft Proposed 29 CFR 1900.1	DOE Order 440.1A Attachment 2	International Labor Standard C155
Multi-employer workplaces	<p>The host employer's responsibilities are to:</p> <ul style="list-style-type: none"> (i) Provide information about hazards, controls, safety and health rules, and emergency procedures to all employers at the workplace; and (ii) Ensure that safety and health responsibilities are assigned as appropriate to other employers at the workplace. <p>{1900.1 (h)(1)}</p> <p>The responsibilities of a contract employer are to:</p> <ul style="list-style-type: none"> (i) Ensure that the host employer is aware of the hazards associated with the contract employer's work and what the contract employer is doing to address them; and (ii) Advise the host employer of any previously unidentified hazards that the contract employer identifies at the workplace. <p>{1900.1 (h)(2)}</p>	<p>13. Ensure that subcontractors performing work on DOE-owned or -leased facilities comply with this Contractor Requirements Document and the contractor's own site worker protection standards (where applicable).</p>	<p>Whenever two or more undertakings engage in activities simultaneously at one workplace, they shall collaborate in applying the requirements of this Convention.</p> <p>{Article 17}</p>

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